U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE ATTORNEY'S DOCKET NUMBER 7407879-052490 TRANSMITTAL LETTER TO THE UNITED STATES U.S. APPLICATION NO. (If known, see 37 CFR 1.5 DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371 INTERNATIONAL APPLICATION NO. INTERNATIONAL FILING DATE PRIORITY DATE 7 September 1999 PCT/GB00/03413 7 September 2000 WER GUIDANCE SYSTEM APPLICANT(S) FOR DO/EO/US HAMILTON, Sheila and KENNET, Charles Jonathan Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information: 1. X This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371. 2. This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below. The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. \overline{X} A copy of the International Application as filed (35 U.S.C. 371(c)(2)) is attached hereto (required only if not communicated by the International Bureau). has been communicated by the International Bureau. is not required, as the application was filed in the United States Receiving Office (RO/US). 6. X An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). x is attached hereto. has been previously submitted under 35 U.S.C. 154(d)(4). Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) are attached hereto (required only if not communicated by the International Bureau). have been communicated by the International Bureau. have not been made; however, the time limit for making such amendments has NOT expired. X have not been made and will not be made. An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)). 9. X An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). Items 11 to 20 below concern document(s) or information included: An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 11. X An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. A FIRST preliminary amendment. A SECOND or SUBSEQUENT preliminary amendment. A substitute specification. A change of power of attorney and/or address letter. 16. A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 17. A second copy of the published international application under 35 U.S.C. 154(d)(4). 18. A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). Other items or information: 20. X Form 1449 (1 pg.); PCT/IB/301 with Annex (3 pp.); PCT/IB/304 (1 pg.); PCT/ISA/220 with Notes (3 pp.); PCT/ISA/210 with Annex (3 pp.); PCT/IB/308 (2 pp.); PCT/IB/332 (1 pg.); Form PCT/IPEA/409 (1 pp.): Cover Sheet, Sheets 1-2 and Separate Sheets 1-4; Express Mail Certificate - Label No. EL565098356US (1 pg.); and Return Receipt Postcard.

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21. X The following fees are submitted:					CULATIONS	PTO USE ONLY
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- 1 -

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Sheila Hamilton and Charles Jonathan Kennett

: Art Unit

Serial No: : Examiner

International Application No : PCT/GB00/03413
International Filing Date : 7 September 2000

Filed: (herewith)

FOR: "Web Guidance System"

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents Washington DC 20231

S I R:

Preliminary to examination in the United States
Patent and Trademark Office, please make the following
amendments in the above-identified application in order to
place it in condition for examination.

IN THE SPECIFICATION:

Amend the specification by inserting before the first line the sentence:

This application is the US national phase application of PCT International Application No PCT/GB00/03413 filed September 7, 2000.

IN THE CLAIMS:

Please replace Claims 5, 6, 8 and 9 as follows:-

CLAIMS

- 5. (Amended) A web guidance system according to Claim 1, in which the or each cleaning roller is provided with a respective backup roller arranged to engage the cleaning roller and having a surface coated with a material having a degree of tackiness greater than that of the cleaning roller for removing particulates from the cleaning roller.
- 6. (Amended) A web guidance system according to Claim 1, in which the several rollers are mounted for rotation about parallel roller rotation axes in a common frame, the frame being rotatable about a frame rotation axis which is perpendicular to said roller rotation axes.
- 8. (Amended) A web guidance system according to Claim 1, in which cleaning takes place at an upstream side of the system.
- 9. (Amended) A web guidance system according to Claim 1 · in which cleaning takes place at a downstream side of the system.

- 3 -

IN THE ABSTRACT

Please include an Abstract on a separate sheet as enclosed herewith.

Respectfully Submitted,

David S Resnick, Reg No 34,235

Attorney for Applicant

Dated:

Nixon Peabody LLP 101 Federal Street Boston Massachusetts MA 02110-1832 USA - 4 -

ABSTRACT

A system (20) for handling a web (25) combines guiding and cleaning functions. A guiding roller (22) and upper and lower cleaning rollers (23A, 23B) are mounted in a frame (21) which can be rotated about an axis transverse to the rollers (22, 23A, 23B) to guide the web (25). Other combinations of guiding and cleaning rollers are disclosed.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Specification at page 1, line 1:

This application is the US national phase application of PCT International Application No PCT/GB00/03413 filed September 7th, 2000.

IN THE CLAIMS:

- 5. (Amended) A web guidance system according to any preceding claim Claim 1, in which the or each cleaning roller is provided with a respective backup roller arranged to engage the cleaning roller and having a surface coated with a material having a degree of tackiness greater than that of the cleaning roller for removing particulates from the cleaning roller.
- 6. (Amended) A web guidance system according to any preceding claim Claim 1, in which the several rollers are mounted for rotation about parallel roller rotation axes in a common frame, the frame being rotatable about a frame rotation axis which is perpendicular to said roller rotation axes.
- 8. (Amended) A web guidance system according to any preceding claim 1, in which cleaning takes place at an upstream side of the system.
- 9. (Amended) A web guidance system according to any of claims 1 to 7 Claim 1, in which cleaning takes place at a downstream side of the system.

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CLEAN COPY OF AMENDED CLAIM SET

CLAIMS

- 1. A web guidance system which incorporates web cleaning means, the system comprising at least one guiding roller controllable to effect guiding of the web, and at least a first cleaning roller having an outer surface coated with a material having a degree of tackiness capable of removing particulates from a surface of the web.
- 2. A web guidance system according to claim 1, including a second cleaning roller having an outer surface coated with a material having a degree of tackiness capable of removing particulates from the other surface of the web.
- 3. A web guidance system according to claim 2, in which one of the cleaning rollers constitutes the guiding roller.
- 4. A web guidance system according to claim 3, in which the cleaning roller which constitutes the guiding roller has a surface hardness greater than that of the other cleaning roller.
- 5. A web guidance system according to Claim 1, in which the or each cleaning roller is provided with a respective backup roller arranged to engage the cleaning roller and having a surface coated with a material having a degree of tackiness greater than that of the cleaning roller for removing particulates from the cleaning roller.
- 6. A web guidance system according to Claim 1, in which the several rollers are mounted for rotation about parallel roller rotation axes in a common frame, the frame being rotatable

about a frame rotation axis which is perpendicular to said roller rotation axes.

- 7. A web guidance system according to claim 6, including a feedback control loop which comprises an edge sensor for sensing the position of the web edge at a location downstream of the rollers, and an actuator arranged to rotate said frame about the frame rotation axis in response to the output of the edge sensor.
- 8. A web guidance system according to Claim 1, in which cleaning takes place at an upstream side of the system.
- 9. A web guidance system according to any of Claims 1, in which cleaning takes place at a downstream side of the system.

/homekirk/aho/response/p24556c-usclaims.doc

10670700 PCT/GB00/03413 JC19 Rec'd PCT/PTO 0 7 MAR 2002

1	"Web Guidance System"
2	
. 3	The present invention relates to a web guidance system
4	and in particular to a web guidance system capable of
5	web cleaning.
6	
7	It is known in production processes to make use of webs
8	which require to be cleaned. Such webs are thin,
9	generally plastic materials and web guidance systems
10	are well known in the art. Webs are prone to run off
11	track easily and the web guidance systems are used to
12	keep the web on a desired track.
13	
14	Web cleaning systems are also known in the art, these
15	cleaning systems being used to remove particulates from
16	at least one surface of the web.
17	
18	In the past it has been the practice to use separate
19	web cleaning systems and web guidance systems. The
20	surface of a cleaning roller is formed of elastomeric

1 material which is compressible. This compressibility 2 means that when the web is placed in tension over the cleaning roller the web can deviate from track, and 3 this factor has caused cleaning rollers to be thought 4 5 not to be suitable for use also as quidance rollers which has inhibited the development or use of combined 6 7 cleaning/guidance systems. system can malfunction. 8 9 According to invention, there is provided a web 10. guidance system which incorporates web cleaning means, 11 the system comprising at least one guiding roller controllable to effect guiding of the web, and at least 12 a first cleaning roller having an outer surface coated 13 with a material having a degree of tackiness capable of 14 removing particulates from a surface of the web. 15 16 17 The system may include a second cleaning roller having an outer surface coated with a material having a degree 18 19 of tackiness capable of removing particulates from the 20 other surface of the web. 21 22 One of the cleaning rollers may constitute the guiding 23 roller. 24 25 Preferably, the cleaning roller which constitutes the guiding roller has a surface hardness greater than that 26 of the other cleaning roller. 27 28 29 Preferably also, the or each cleaning roller is provided with a respective backup roller arranged to 30

engage the cleaning roller and having a surface coated

with a material having a degree of tackiness greater

1	than that of the cleaning roller for removing
2	particulates from the cleaning roller.
3	
4	In preferred embodiments, the several rollers are
5	mounted for rotation about parallel roller rotation
. 6	axes in a common frame, the frame being rotatable about
7	a frame rotation axis which is perpendicular to said
8	roller rotation axes; and the system suitably includes
9	a feedback control loop which comprises an edge sensor
10	for sensing the position of the web edge at a location
11	downstream of the rollers, and an actuator arranged to
12	rotate said frame about the frame rotation axis in
13	response to the output of the edge sensor.
14	
15	Cleaning may take place at an upstream side or at a
16	downstream side of the system.
17	
.18	Embodiments of the present invention will now be
19	described, by way of example only, with reference to
20	the accompanying drawings, in which:
21	
22	Fig. 1 is a schematic isometric view of a web
23	guidance system as known in the art;
24	
25	Fig. 2 is a schematic isometric view of one
26	embodiment of the present invention; and
27	
28	Figs. 3 to 9 are views similar to fig. 2 of
29	alternative embodiments of the invention.
30	
31	Fig. 1 illustrates web guiding apparatus 10 as is known
32	in the art. The web guiding apparatus 10 comprises a

mounting plate 11 on which a first guiding roller 12 1 and a second quiding roller 13 are mounted for rotation 2 about spaced horizontal axes. A web 15 is placed in 3 tension over the first and second guiding rollers 12 and 13. The web guiding apparatus 10 further comprises 5 an edge sensor 14 for detecting the edge of the web and 6 ensuring that the web 15 is running on track. When the 7 sensor 14 detects that the web 15 is moving off track 8 then a suitable control system is activated. The 9 control system comprises a feedback loop 16A driving a 10 linear actuator 16 which is arranged to rotate the 11 mounting plate 11 about a central vertical axis. 12 the linear actuator 16 causes the axes of the guiding 13 rollers 12 and 13 to swivel in a horizontal plane, in 14 order to cause the web 15 to track in the desired 15 direction. The feedback loop 16A continues to operate 16 the linear actuator 16 until the sensor 14 detects that 17 the web 15 is in the desired location. 18 19 Referring to Fig. 2, there is illustrated one 20 embodiment of a web guidance system 20 in accordance 21 22 with the present invention, which includes web cleaning apparatus for cleaning both the upper and lower 23 surfaces of the web 25. The system 20 comprises 24 25 mounting plates 21A and 21B adapted to mount an input roller 22, an upper cleaning roller 23A, a lower 26 cleaning roller 23B, a first back-up roller 24A and a 27 second back-up roller 24B. The various rollers rotate 28 about parallel, horizontal axes, while the mounting 29 plates are mounted (by means not shown) to rotate about 30 a vertical axis at the midlength of the assembly. 31

- 1 The web 25 is fed over the input roller 22 then between
- 2 the upper and lower cleaning rollers 23A and 23B. The
- 3 web then passes an anti-static device 26, which removes
- 4 static built up through the system. An edge sensor 14,
- 5 feedback loop 16A and linear actuator 16 are provided
- 6 which operate as in the prior art system to keep the
- 7 web 25 on the desired track.

- 9 As will be evident, the lower cleaning roller 23B also
- 10 acts as a web guiding roller equivalent to the web
- 11 quiding roller 12 of the prior art design shown in
- 12 Fig. 1. In order for the web guidance aspect of this
- 13 embodiment to operate efficiently, the web 25 must be
- in tension over the guiding roller 23B.

15

- 16 Normally, cleaning rollers, by their nature, are not as
- 17 hard as guiding rollers, because the cleaning rollers
- 18 generally use elastomeric materials and have a degree
- 19 of "give". This means that when the web 25 is put in
- 20 tension over the lower cleaning roller 23B, it is
- 21 compressed and the web guiding system may not operate
- 22 effectively.

23

- 24 However, in this present embodiment, the surface of the
- 25 lower cleaning roller 24B is harder than the surface of
- 26 the upper cleaning roller 23A. Therefore, the lower
- 27 cleaning roller 23B has less "give" than the upper
- 28 cleaning roller 23A thus allowing the guidance aspect
- 29 of the embodiment to function properly.

- 31 The web cleaning system operates in a manner that is
- 32 well known in the prior art, that is, having upper and

- 1 lower cleaning rollers 23A and 23B respectively, both
- 2 having first degrees of adhesive tackiness to remove
- 3 particulates from the upper and lower surfaces of the
- 4 web 25, respectively. These upper and lower cleaning
- 5 rollers 23A and 23B engage first and second back-up
- 6 rollers 24A and 24B, respectively. These first and
- 7 second back-up rollers 24A and 24B have second degrees
- 8 of adhesive tackiness for removing the particulates
- 9 from the upper and lower cleaning rollers 23A and 23B.

- 11 Alternative embodiments will now be described with
- 12 reference to Figs. 3 to 9. In these Figures like parts
- 13 are denoted by like reference numerals, and the anti-
- 14 static device 2 and the edge detector 14 and feedback
- 15 system 16, 16A have been omitted but operate as before.

16

- 17 In Fig. 3, a mounting plate 11 is pivoted on a support
- 18 30. Two rollers are rotatably carried by the mounting
- 19 plate 11: a cleaning roller 23A at the input side, and
- 20 a guiding roller 13 at the output side.

21

- 22 In Fig. 4, the mounting plate 11 carries guiding
- 23 rollers 12 and 13, the guiding roller 13 at the output
- 24 end having associated therewith a cleaning roller 23A
- 25 and adhesive backup roller 24A. Fig. 5 is similar, but
- 26 the cleaning roller 23A and backup roller 24A are
- 27 positioned at the input end.

28

- 29 The embodiments of Figs. 3 to 5 are therefore suitable
- 30 for cleaning only one side of the web. The embodiments
- 31 shown in Figs. 6 to 9 clean both sides of the web.

- 1 Fig. 6 is similar to Fig. 5, but the input end guiding
- 2 roller is replaced by a second cleaning roller 23B and
- 3 backup roller 24B.

- 5 Fig. 7 shows an arrangement in which the web 25 passes
- 6 through the system substantially linearly, supported by
- 7 non-steerable infeed and outfeed rollers 70 and 71.
- 8 Upper and lower cleaning rollers 23A and 23B and backup
- 9 rollers 24A and 24B are rotatably mounted, as shown
- 10 only schematically, on a carrier 72 to form an
- 11 assembly 73 which can be rotated about a vertical axis
- on a base 74. The assembly 73 is rotated under
- 13 feedback control as before to correct the track of the
- 14 web.

15

- 16 Fig. 8 shows an assembly 73 similar to that of Fig. 7,
- 17 but mounted within a mounting plate 11 which also
- 18 carries guiding rollers 12 and 13. Fig. 9 is similar
- 19 functionally to Fig. 8, but the assembly 73 is secured
- 20 by readily accessible bolts 90 into a modified mounting
- 21 plate 91 such that the assembly 73 can readily be
- 22 removed and replaced in a modular manner.

23

- 24 Modifications and improvements may be made to the
- 25 foregoing within the scope of the present invention.

8

1	CLAI	IMS
2		
3	1.	A web guidance system which incorporates web
4		cleaning means, the system comprising at least one
5		guiding roller controllable to effect guiding of
. 6		the web, and at least a first cleaning roller
7		having an outer surface coated with a material
8		having a degree of tackiness capable of removing
9		particulates from a surface of the web.
10		
11	2.	A web guidance system according to claim 1,
12		including a second cleaning roller having an outer
13		surface coated with a material having a degree of
14		tackiness capable of removing particulates from
15		the other surface of the web.
16		
17	3.	A web guidance system according to claim 2, in
18		which one of the cleaning rollers constitutes the
19		guiding roller.
20		
21	4.	A web guidance system according to claim 3, in
22		which the cleaning roller which constitutes the
23		guiding roller has a surface hardness greater than
24		that of the other cleaning roller.
25		
26	5.	A web guidance system according to any preceding
27		claim, in which the or each cleaning roller is
28		provided with a respective backup roller arranged
29		to engage the cleaning roller and having a surface
30		coated with a material having a degree of

tackiness greater than that of the cleaning roller

1		for removing particulates from the cleaning
2		roller.
3		
4	6.	A web guidance system according to any preceding
5		claim, in which the several rollers are mounted
6		for rotation about parallel roller rotation axes
7		in a common frame, the frame being rotatable about
8		a frame rotation axis which is perpendicular to
9		said roller rotation axes.
10		
11	7.	A web guidance system according to claim 6,
12		including a feedback control loop which comprises
13		an edge sensor for sensing the position of the web
14		edge at a location downstream of the rollers, and
15		an actuator arranged to rotate said frame about
16		the frame rotation axis in response to the output
17		of the edge sensor.
18		
19	8.	A web guidance system according to any preceding
20		claim, in which cleaning takes place at an
21		upstream side of the system.
22		
23	9.	A web guidance system according to any of claims 1
24		to 7, in which cleaning takes place at a
25		downstream side of the system.

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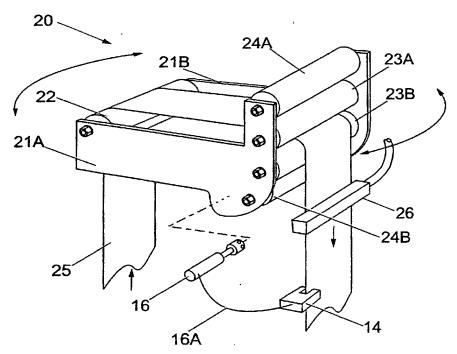
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[Continued on next page]

(54) Title: WEB GUIDANCE SYSTEM



(57) Abstract: A system (20) for handling a web (25) combines guiding and cleaning functions. A guiding roller (22) and upper and lower cleaning rollers (23A, 23B) are mounted in a frame (21) which can be rotated about an axis transverse to the rollers (22, 23A, 23B) to guide the web (25). Other combinations of guiding and cleaning rollers are disclosed.

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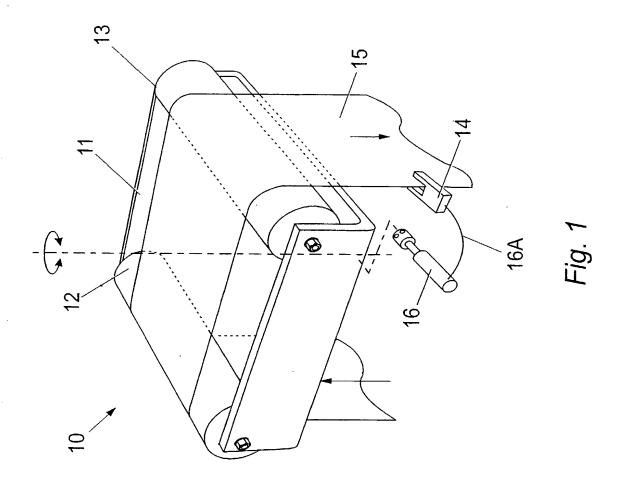
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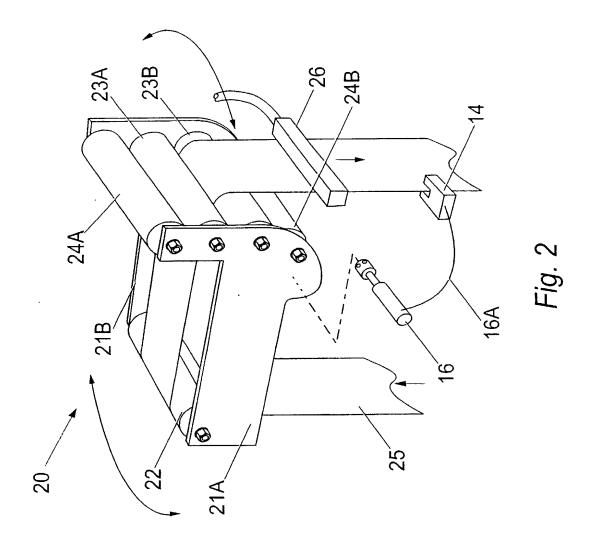


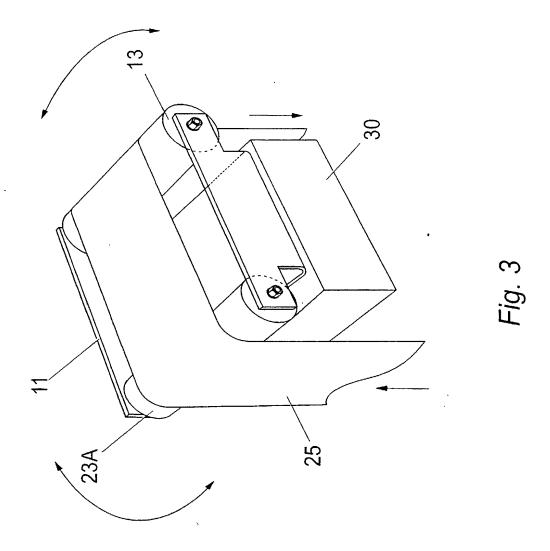
 Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

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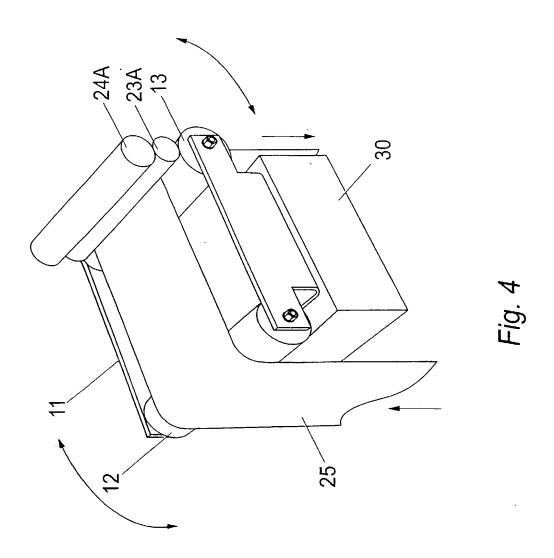
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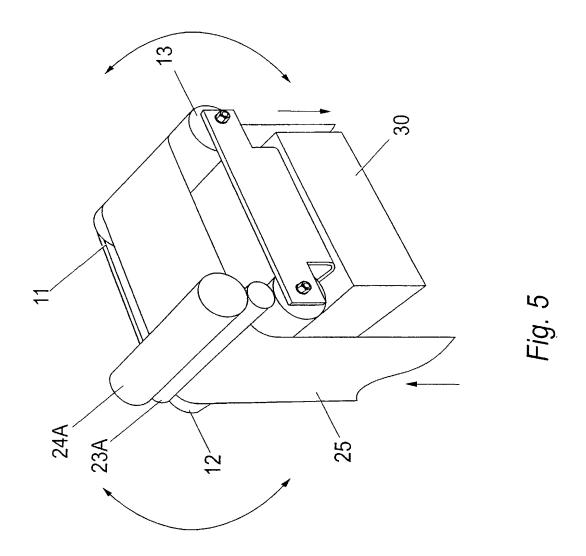


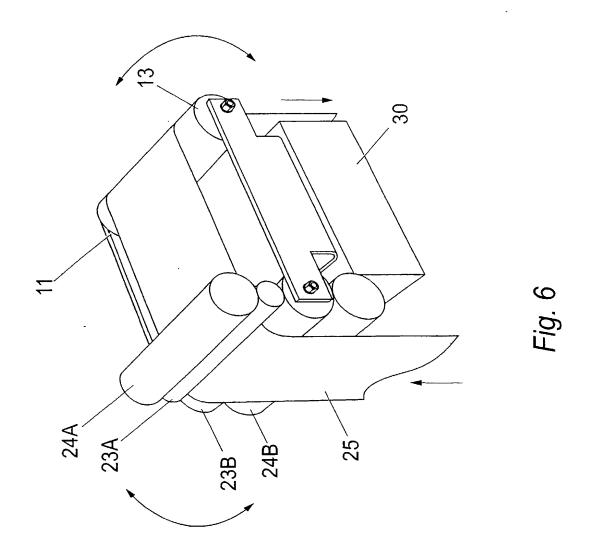


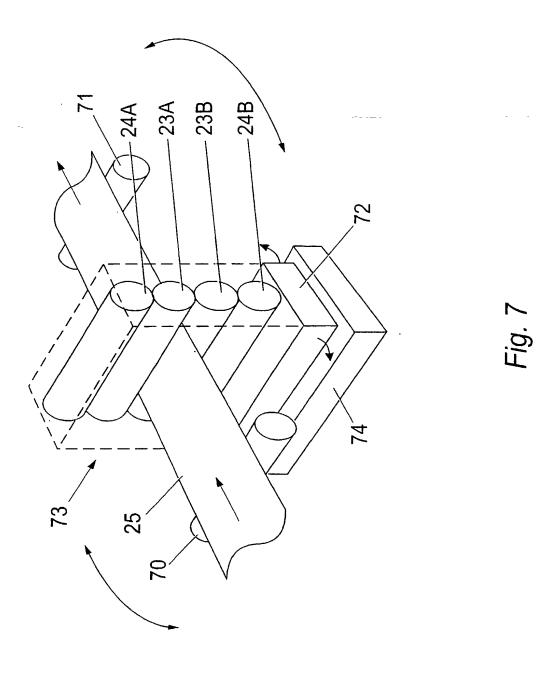


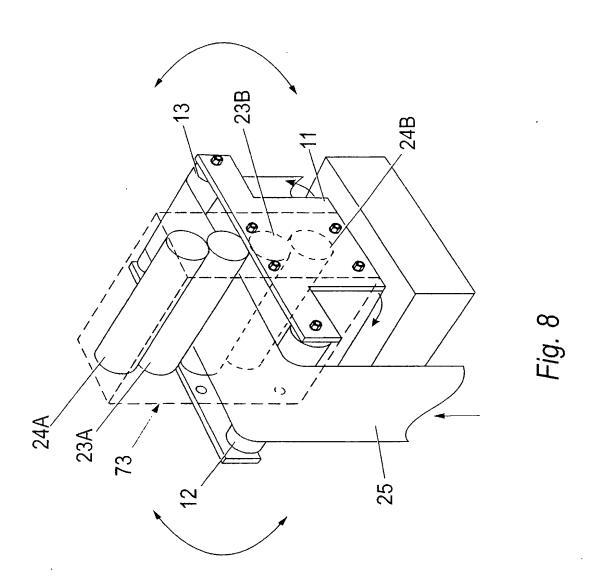
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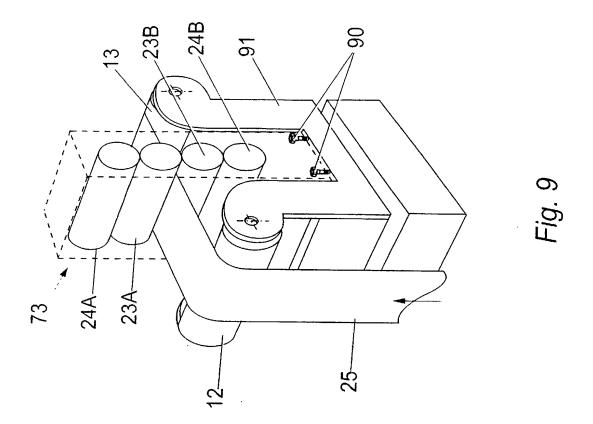












NIXON PEABODY LLP

Attorey's Docket No.

101 Federal Street Boston, Massachusetts 02110

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DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that: My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed at 201) below or an original, first and joint inventor (if plural names are listed at 201-208 below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

	"Web Guidance System"
which is descri	bed and claimed in:
	the specification attached hereto.
22	the specification in International Application Number PCT/GB00/03413 filed on 7 September 2000 ; and

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a). I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior Foreign/PCT Applications and Any Priority Claims Under 35 U.S.C. §119:				
Application No.	Filing Date	Country	Priority Claimed under 35 U.S.C. §119?	
9920973.6	7 September 1999	United Kingdom	MYES CINO	
0002996.7	10 February 2000	United Kingdom	MYES INO	
PCT/GB 00/03413	7 September 2000	PCT	Mayes (Ino	
			□YES □NO	

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below, and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose material information as defined in 37 CFR §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Prior U.S. Applications or PCT International Applications Designating the U.S-Benefit under 35 U.S.C. §120						
	U.S. Applications		s	Status (Check One)		
Application	Serial No.	U.S. Filing Date	Patented	Pending	Abandoned	
PCT App	olications De	signating the U.S.				
Application No.	Filing Date	U.S. Serial No. Assigned				

CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S) (35 U.S.C. §119(e))

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below:

Applicant	Provisional Application Number	Filing Date

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) with full powers of association, substitution and revocation to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Ronald I Succession
Nicole L.M. Valta
William T Prench

Euconstott (Reg. No. 30,628)
M. Valtz (Rog. No. 47,150)
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(Reg. No. 30,727) (Reg. No. 33,461) (Reg. No. 40,087)

Joseph Notes

(Reg No 32,163)

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David S. Resnick (617) 345-6057 1-00

	FULL NAME OF	LAST NAME	FIRST NAME	MIDDLE NAME
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2 0	RESIDENCE &	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
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	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE OR COUNTRY AND ZIP CODE
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2			UNITED KINGDOM	A BRITISH SUBJECT
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	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE OR COUNTRY AND ZIP CODE

I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge

that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature of Inventor 201	Date: 15 th Formary 2002
Signature of Inventor 202 Meila Hamilton	Date: 15th Formary 2002
Signature of Inventor 203	Date: